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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,646	10/24/2003	John Kevin McCoy	12093/930	8631
26646	7590	06/21/2007		
KENYON & KENYON LLP ONE BROADWAY NEW YORK, NY 10004			EXAMINER TSOY, ELENA	
			ART UNIT 1762	PAPER NUMBER
			MAIL DATE 06/21/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<p align="center"><b>Office Action Summary</b></p>	<b>Application No.</b> 10/692,646	<b>Applicant(s)</b> MCCOY, JOHN KEVIN	
	<b>Examiner</b> Elena Tsoy	<b>Art Unit</b> 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 May 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,4 and 6-16 is/are pending in the application.
- 4a) Of the above claim(s) 13-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4 and 6-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |  |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)<br>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)<br>3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____<br>5) <input type="checkbox"/> Notice of Informal Patent Application<br>6) <input type="checkbox"/> Other: _____ |
|--|--|

***Response to Amendment***

Amendment filed on May 14, 2007 has been entered. Claims 3 and 5 have been cancelled. Claims 1, 2, 4, 6-16 are pending in the application. Claims 13-16 are withdrawn from consideration as directed to a non-elected invention.

***Claim Objections***

1. Objection to claim 3 under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim has been withdrawn due to cancellation of the claim.
2. Objection to claim ~~9~~ 11 because of the informalities has been withdrawn due to amendment.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
4. Claim 11 stands rejected under 35 U.S.C. 112, first paragraph for the reasons of record set forth in paragraph 5 of the Office Action mailed on 2/9/2007, because the specification does not reasonably provide enablement for at least 5% increase, i.e. **unlimited** increase of thermal conductivity compared to that of a fuel arrangement from pure uranium dioxide.
5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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6. Claim 11 stands rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention for the reasons of record set forth in paragraph 7 of the Office Action mailed on 2/9/2007 because it is not clear from the specification that "pure uranium dioxide" means *unmodified* uranium dioxide. Applicants are advised to change language of the claim accordingly.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Rejection of claims 1, 3-4, 9, and 12 under 35 U.S.C. 102(b) as being anticipated by Feraday (US 4,020,131) has been withdrawn due to amendment.

9. Rejection of claims 1, 3-4, 9, and 12 under 35 U.S.C. 102(b) as being anticipated by GB1228317A has been withdrawn due to amendment.

10. Rejection of claims 1, 3-4, 9, and 12 under 35 U.S.C. 102(b) as being anticipated by Lee (US 4,110,159) has been withdrawn due to amendment.

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 4, 6-9, and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB1035789 in view of Carley-Macaulay et al (US 3164487) for the reasons of record set forth in paragraph 13 of the Office Action mailed on 2/9/2007 because limitations of claim 5 are incorporated into claim 1.

13. Claims 1, 4, 6-9, and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carley-Macaulay et al (US 3164487) in view of Nicholson et al (US 3,035,325) and Mysels (US 4,073,834) for the reasons of record set forth in paragraph 14 of the Office Action mailed on 2/9/2007 because limitations of claim 5 are incorporated into claim 1.

14. Claims 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB '789 in view of Carley-Macaulay et al/Carley-Macaulay et al in view of Nicholson et al and Mysels/, and further in view of Burnham et al (US 3,129,141) and Chayka (US 5952046) for the reasons of record set forth in paragraph 15 of the Office Action mailed on 2/9/2007.

15. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carley-Macaulay et al in view of Nicholson et al and Mysels, and further in view of GB '789 for the reasons of record set forth in paragraph 16 of the Office Action mailed on 2/9/2007.

#### ***Response to Arguments***

16. Applicants' arguments filed May 14, 2007 have been fully considered but they are not persuasive.

**Rejection of Claims 1, 3-9, 11-12 under 35 U.S.C. 103(a).**

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(A) Applicants argue that in contrast to a porous nuclear fuel which is being impregnated with a polymerizable substance, it is the porous graphite matrix, a non metallic material, which contains protectively coated nuclear fuel particles that is being impregnated with a polymerizable substance in the method disclosed in GB'789.

The Examiner respectfully disagrees with this argument. In contrast to Applicants argument, Claim 1 recites infiltrating a porous uranium dioxide arrangement not uranium dioxide itself. In the absence of definition, "a porous uranium dioxide arrangement" was given its *broadest* reasonable interpretation.

It is well settled that claims are to be given their *broadest* reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim should not be read into the claim. E-Pass Techs., Inc. v. 3Com Corp., 343 F.3d 1364, 1369, 67 USPQ2d 1947, 1950 (Fed. Cir. 2003) (claims must be interpreted "in view of the specification" *without importing limitations* from the specification into the claims unnecessarily). In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969). Where an explicit definition is provided by the applicant for a term, that definition will control interpretation of the term as it is used in the claim. Any special meaning assigned to a term "must be sufficiently clear in the specification that any departure from common usage would be so understood by a person of experience in the field of the invention." Multifactor Desiccants Inc. v. Medzam Ltd., 133 F.3d 1473, 1477, 45 USPQ2d 1429, 1432 (Fed. Cir. 1998).

(B) Applicants argue that Carley-Macauley et al in combination with Nicholson et al and Mysels does not teach or suggest the claimed method in independent claim 1, as amended.

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Carley-Macauley et al do not disclose the claimed method of infiltrating a liquid precursor material in a porous uranium dioxide, and Nicholson et al and Mysels do not cure this failure. In Nicholson et al, impregnating techniques using a liquid precursor are only disclosed to deposit carbon in silicon carbide bodies; and the silicon carbide bodies prepared by the method disclosed in Nicholson et al are not nuclear fuel bodies, let alone porous uranium dioxide nuclear fuel. Therefore, there is no motivation to combine the teachings of Carley-Macauley et al with Nicholson et al. Mysels discloses a method of preparing a nuclear fuel element by impregnating a porous graphite block containing nuclear fuel chambers with a carbonizable impregnant which penetrates the fuel chambers.

The Examiner respectfully disagrees with this argument. Nicholson et al is a *secondary* reference which is relied upon to show carbon can be deposited in the pores of substantially *any* refractory body having intercommunicating network by either pyrolysis of gas or impregnation of the porous body with phenol-formaldehyde resin or furfural or -the like, followed by carbonization by acidification. Mysels is also a *secondary* reference which is relied upon to show teaches that carbon can be deposited in the pores in a fuel arrangement from impregnant such as phenol-formaldehyde prepolymer or furfuryl alcohol monomer/prepolymer by **curing** first the prepolymer and decomposing the cured polymer at temperature of 200-800<sup>0</sup>C and carbonizing at 1200<sup>0</sup>C or **higher** (claimed firing). Therefore, there is clear motivation to combine Carley-Macauley et al with Nicholson et al and Mysels.

It is held that rationale different from applicant is permissible. The reason or motivation to modify the reference may often suggest what the inventor has done, but for a *different purpose*

*or to solve a different problem.* It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant.

**Rejection of Claims 2 and 10 under 35 U.S.C. 103(a).**

Applicant submits that GB'789 in view of Carley-Macauley and Carley-Macauley in view of Nicholson et al and Mysels fail to teach infiltrating a porous uranium dioxide fuel material with a liquid precursor to obtain an uranium dioxide arrangement containing a second phase silicon carbide. Burnham et al is directed to a method of preparing a nuclear fuel element comprising a dense body of uranium carbide, graphite, silicon carbide and silicon. Burnham et al does not teach or suggest infiltrating porous uranium dioxide with a liquid precursor material. Chayka is directed to the chemical vapor deposition of silicon carbide or carbide on substrates, and does not teach infiltrating and curing a liquid precursor in a nuclear fuel body or material.

The Examiner respectfully disagrees with this argument. Since Burnham et al teach it is desirable that a nuclear fuel element comprises a dense body of uranium carbide, graphite, silicon carbide and silicon, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a silicon carbide instead or **in addition to graphite** in the cited prior art in with the expectation of providing the desired dense body. Therefore, there is a clear motivation to combine the cited prior art with Burnham.

In contrast to Applicants argument, Chayka is cited for teaching that HPCS is commercially available (liquid) monomer *polymerizable* to AHPCS (See column 9, lines 36-42). Therefore, HPCS is suitable for the use as a liquid precursor for forming a cured polymer in a method of the cited prior art.



It is held that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07.

**Rejection of Claim 11 under 35 U.S.C. §103(a).**

Applicant submits that the cited references fail to teach or suggest, either alone or in combination the claimed method as in independent claim 1, as amended, from which claim 11 depends.

The Examiner respectfully disagrees with this argument for the reasons discussed above.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is 571-272-1429. The examiner can normally be reached on Monday-Thursday, 9:00AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-142323. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elena Tsoy  
Primary Examiner  
Art Unit 1762

ELENA TSOY  
PRIMARY EXAMINER



June 18, 2007